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ABSTRACT

The report reviews recent arguments for directing attention to suitability for a linguistic course of study. A first step in that direction, a Verbal Reasoning Test composed and tried out in the 1975 student selection for English, is described, and the results of this experiment, involving 1046 candidates, are given. The Verbal Reasoning Test is shown to have functioned efficiently and to have predicted success in the selection. The results suggest that the test enhances the discriminatory power of the entrance examination and adds to it a new dimension to supplement the academic achievement and language proficiency criteria used at present. There are also indications that the measure of suitability given by the verbal reasoning test is less dependent on the candidate's regional and school background than the other selection criteria are. The experimentation is to continue in the 1976 student selection for languages. (Author)

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UNIVERSITY STUDENT SELECTION FOR LANGUAGE SUBJECTS: Verbal Reasoning Ability as a Criterion

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1. INTRODUCTION

Since 1974, the English Departments at the Universities of Joensuu, Jyväskylä and Turku (plus Tampere since 1975) have selected their students by means of a joint entrance examination. Through this co-operation, a reliable and discriminating language battery with a wide coverage of the applicants' linguistic competence has been developed (see Kohonen 1974). Proficiency in English is an important criterion because the ability to follow English-medium instruction in the oral and written modes is a prerequisite in university English study from the very beginning. The battery evolved by the Departments is considered a more representative measure of the applicants' proficiency than the school record and the matriculation examination. Besides, the matriculation examination is of little use in the selection for statistical reasons as well: it discriminates poorly at the upper end of the scale, which is exactly where discrimination is needed since the applicants generally display a high degree of proficiency and since less than 20 per cent of them can be admitted (Kohonen 1974, 26). This problem is made especially acute by the negatively skewed mark distribution of the matriculation examination (Hirvonen 1974, 8). Despite the deficiencies of the school and matriculation records, however, these comprise 30 per cent of the selection criteria, with the language battery making up the remaining 70 per cent (for details, see Kohonen 1974).

On similar grounds, other language departments have begun to experiment with joint selection procedures. Co-operation among Departments of German began in 1974 and among Departments of Swedish and French in 1975.

Recently, however, doubts have been voiced from several quarters regarding the use of language proficiency as the sole or main criterion in the selection. It has been emphasised that besides the teaching and learning of the practical command of the language, university language study is every bit as theoretical as the academic study of any other subject. Command of the language, important though it is, does not guarantee success in the theoretical components of study. - Below, I shall review some of these arguments.

Hirvonen (1974) considers the most important student qualities to be looked for in the selection, besides a good practical command of the language, to be the following:

1. Ability to process and use theoretical knowledge: not only to memorise and recall knowledge acquired from textbooks and lectures but to evaluate it and apply it to solving problems in one's field. In the field of foreign language study this requirement seems to call attention to that aspect of theoretical thinking which might be termed "verbal reasoning": ability to perceive the patterning of language data and to use such perception in solving verbal, or linguistic, problems.

2. Motivation for language study: interest in the language, desire to know more about its structure, its use, its background, its development. University language study clearly requires a genuine interest in the language and its various manifestations for their own sakes, not merely a desire to improve one's practical command of the language.

These qualities may not be determined by the quality of teaching received at school as largely and as directly as the practical command of the language is. If this be true, the inclusion of these qualities in the selection criteria would seem to de-emphasise the differences in the standard of teaching that the candidates happen to have received at school and to base the selection more on their aptitude and suitability for academic language study.

A conference of Departments of Swedish on 11 October 1974 recommended that the Departments should, if possible, in co-operation with other languages work out a test to assess general language aptitude ("den allmänna språkbegåvningen") in the student selection.

On 12 April 1975, The Association of Modern Language Students (Uusien Kielten Opiskelijain Liitto r.y.) passed a resolution to the effect that university language departments should urgently start work towards developing entrance examinations which are socially just and which measure reliably the candidate's suitability for the field of study. The requirement of social justness refers to the commonly held view that the use of proficiency in the language (especially oral language) as a criterion tends to favour candidates who come from cities, from "industrial Finland", or from homes that are wealthy enough to afford foreign travel or other extra means of improving the candidate's language skills. The requirement of assessing suitability refers to the existence of the large and varied theoretical component in university language study, success in which is not guaranteed by language proficiency alone.

In the context of the joint selection project, the project leaders of the participating languages, some assessment specialists and a representative of the Language Centre, University of Jyväskylä, held an "inter-language" planning session on 18 November 1974 to discuss procedures in the 1975 selection. They decided that a test of

Verbal Reasoning should be constructed and tried out in the 1975 entrance examination. It was further agreed that this test should be first tried out in the examination for English only, since the English departments had already achieved a comprehensive, reliable language battery and were thus in the best position to direct resources to such an experiment.

Quite recently, another factor has emerged that greatly enhances the need to enlarge the scope of the language entrance examinations. The Degree and Syllabus Reform (tutkinnonuudistus), planned to take effect in 1977, entails the organisation of university studies in terms of goal-oriented, interdisciplinary "training programmes" (koulutusohjelmat) instead of separate, independent subjects. This means that candidates aiming at academic language study will no longer be selected for a single subject (such as 'English') but for a linguistic course of study which is jointly planned and implemented by the Departments of various languages, of Linguistics, Literature, Sociology, Pedagogy etc. The problems of selection procedures are far from being solved, but the view that seems to command the widest support is that there should be a general linguistic main component in the entrance examination to assess the candidate's suitability and aptitude for a linguistic course of study. This should be supplemented by language-specific proficiency tests to ensure adequate command of the language(s) to be studied. In the latter tests, a pass-mark could be set in absolute terms ("adequate" or "inadequate"), with the selection among those passing being made on the basis of aptitude as measured by the main component. - The realisation of such a scheme would seem to require substantial experimentation rather urgently.

The Verbal Reasoning Test tried out in the summer of 1975 and discussed in this paper was intended to offer a starting-point for a test of aptitude and suitability for linguistic studies. It is emphatically not being suggested that this short 20-item test could by itself provide an adequate solution.

2. THE FORM AND CONTENT OF THE VERBAL REASONING TEST

The Verbal Reasoning Test (VR) was constructed by the author in co-operation with other members of staff of the English Department at the University of Joensuu.

The aim of the test was to assess theoretical, logical reasoning ability applied to language data. The two best-known tests of language aptitude, "Language Aptitude

Battery" (Pimsleur 1966) and "Modern Language Aptitude Test" (Carroll and Sapon 1959), and the Finnish "Verbal Aptitude" tests used by our vocational guidance offices (ammatinvalinnanohjaustoimistot) were consulted for ideas, but these tests as such were not felt to be sufficiently demanding intellectually.

Better suited material was looked for in some textbooks on linguistics and some research reports. The following sources offered something of interest:

- Koutsoudas (1966), Writing Transformational Grammars
- Langacker (1973), Language and Its Structure
- Wiik (1973), Taksonomista fonologiaa
- a verbal reasoning test used in a University of Jyväskylä research project, directed by Professor Raimo Konttinen, concerned with English Reading Comprehension (a mimeographed manuscript, 1971).

These contained practice problems where the student was given language data (usually in an "exotic" or artificial language) and was required to formulate the rules and principles that accounted for certain phenomena exemplified in the data. The type of task was not directly applicable to our candidates, who had not had systematic instruction in the principles, terminology and techniques of linguistics. Therefore we only used the language material, modifying and simplifying it. The candidate was given sentences in an unknown language, accompanied by Finnish translations. From these, he was required to determine how additional things (given in Finnish) would be expressed in that language. Neither terminology nor the technicalities of formulating linguistic rules were required, only the induction of the patterns and their application to data in the same language. This is not unlike some of the problems one encounters in learning to master a foreign language.

As an example, one of the five sets of data used, with four problems based on it, is given on page 33. The paraphrases and the stems of the items were given to the candidates in Finnish only but are rendered here in English as well for the reader's convenience.

The VR test consisted of five such sets of data, each with four problems, giving 20 test items in all. The items dealt with word order (as in the above example), concord, morphological and phonological patterns (eg. vowel harmony), and the use of articles and other function words.

(Incidentally, the correct answers to the sample problems are 1:b 2:a 3:d 4:a.)

The VR test was administered as a compulsory part of the examination, but it was not used as a criterion in the selection (ie. it had a zero weight coefficient). The latter fact was made less obvious to the candidates by attaching the VR test to the English Structure Test and naming the compound "The Test of Linguistic Structures". This procedure was adopted because we felt that in order to obtain relevant information from

DATA

gal tasupa bod	Tyttö löi koiraa. (The girl hit the dog.)
ped tagrup bod	Poika hyväili koiraa. (The boy caressed the dog.)
tagapa umu buntu ped	Iso poika rakasti äitiä. (The big boy loved mother.)
bod gapa umu	Koira rakastaa äitiä. (The dog loves mother.)
ped gapa gal	Poika rakastaa tyttöä. (The boy loves the girl.)
tasupa ped buntu gal	Iso tyttö löi poikaa. (The big girl hit the boy.)
ma samak buntu pso	Iso mies syö kalan. (The big man is eating the fish.)
pso ma buntu samak	Mies syö ison kalan. (The man is eating the big fish.)
umu ma samak	Äiti syö kalan. (Mother is eating the fish.)
pso tagapa buntu bod	Mies rakasti isoa koiraa. (The man loved the big dog.)
ma gal buntu bod	Iso koira syö tytön. (The big dog is eating the girl.)
tagapa buntu ped buntu gal	Iso tyttö rakasti isoa poikaa. (The big girl loved the big boy.)

SUPPLEMENTARY VOCABULARY

pap	= isoisä (grandfather)	gindi	= pieni (little, small)	pusa	= suudella (kiss)
pile	= lanttu (turnip)	golu	= vanha (old)	basa	= ostaa (buy)

PROBLEMS

1. Vanha isoisä suuteli äitiä.
(Old grandfather kissed mother.)

   a) pusa umu golu pap
   b) tapusa umu golu pap
   c) pusa golu pap umu
   d) golu pap tapusa umu

2. Koira söi pienen lantun.
(The dog ate the small turnip.)

   a) bod tama gindi pile
   b) gindi pile ma bod
   c) bod ma gindi pile
   d) tama gindi pile bod

3. Poika osti kalan.
(The boy bought the fish.)

   a) ped basa samak
   b) samak basa ped
   c) tabasa samak ped
   d) ped tabasa samak

4. Vanha äiti hyväilee pientä tyttöä.
(Old mother is caressing the little girl.)

   a) grup gindi gal golu umu
   b) golu umu grup gindi gal
   c) tagrup gindi gal golu umu
   d) golu umu tagrup gindi gal

the experiment, we had to have the candidates do their best in the test; on the other hand, as the test was being tried out for the first time, its use as a selection criterion did not seem justified.

3. STATISTICAL ANALYSIS OF THE 1975 ENTRANCE EXAMINATION, WITH SPECIAL REFERENCE TO THE VERBAL REASONING TEST

The selection criteria consisted of five school performance variables and a test battery to measure language proficiency. All the tests in the battery were of the multiple choice type. The number of items, the range of possible scores, the number of alternatives in the items, and the weight coefficient of each test were as follows:

	no. of items	min - max	no. of alternatives	weight coefficient		
1.-3. Matriculation examination marks:						
1. Mother tongue	1	0-9	-	3		12/40 = 30%
2. English	1	0-9	-	1		
3. Total points of merit	1	0-9	-	3		
4.-5. School-leaving certificate marks:						
4. Average of marks in theoretical subjects	1	0-9	-	4		
5. English	1	0-9	-	1		
6.-14. Entrance examination:						
6. Auditory discrimination	25	6-25	4	1		28/40 = 70%
7. Identification of utterances in listening	20	6-20	3	1	7	
8. Listening comprehension	30	8-30	3-4	3		
9. English lecture: comprehension questions	20	5-20	3-4	2		
10. Vocabulary and idioms I. discrete items	30	7-30	4	5	7	
11. Vocabulary and idioms II. continuous text	27	9-27	3	2		
12. Reading comprehension	23	5-23	3-5	7	7	
13. English structures	50	12-50	4	7	7	
14. Verbal reasoning	20	5-20	4	0		

The examination was administered on 7 July 1975 simultaneously at the four universities participating in the project.[1] Altogether, 1046 candidates completed the examination. In general, the form and content of the tests and the administrative procedures used followed those of 1974 rather closely (for a comprehensive report on the latter, see Kohonen 1974). The main results in the test analysis of the 1975 examination are given in table 1.

Table 1. Main results in the analysis of the 1975 entrance examination (including school performance). The means ($\bar{x}$) are given in both absolute and relative terms (per cent of maximum possible).
s = standard deviation
SE = standard error of measurement ($s\sqrt{1-rel}$)
rel = reliability coefficient (KR-20)
r = average correlation of individual items to the test

1 no.	2 $\bar{x}$	3 s	4 r	5 rel	6 errorless percentage of s = (s-SE)/s
1	6.11 = 67.9%	2.16	-	-	-
2	7.71 = 85.7%	1.81	-	-	-
3	6.10 = 67.8%	1.83	-	-	-
4	3.98 = 44.3%	2.65	-	-	-
5	4.87 = 54.1%	2.70	-	-	-
6	19.56 = 78.3%	2.88	.19	.621	38 %
7	15.52 = 77.6%	2.33	.15	.470	27 %
8	14.29 = 47.6%	4.32	.21	.671	43 %
9	10.46 = 52.3%	2.98	.18	.556	34 %
10	13.99 = 46.6%	5.14	.30	.795	55 %
11	11.62 = 46.4%	3.18	.13	.555	33 %
12	13.93 = 61.8%	4.10	.29	.756	50 %
13	30.95 = 61.9%	6.89	.26	.809	56 %
14	9.95 = 49.7%	4.47	.38	.816	57 %
total score	169.04 = 59.1%	30.19	-	.902	69 %

1) The analysis of the entrance examination was done, as in previous years, by means of a computer programme called OPSAM (for the manual, see Mikkonen and Mikkonen 1971). The technical operations of the analysis were competently carried out by Ms. Arja Manninen at the Computer Centre of the University of Jyväskylä.

In table 1, column 2 indicates the difficulty of the test, column 3 its descriminatory power. Columns 4 and 5 indicate the consistency and reliability of the discrimination, and column 6 indicates how much "real" discrimination is left after the standard error of measurement has been allowed for.

These results indicate that the battery as a whole functioned well: it discriminated among the candidates efficiently and reliably, even though the figures for some individual subtests were not very impressive. The results also show that the functioning of the VR test (No. 14) was superior to that of all other subtests: its diffi ulty index, just under 50 %, was near the optimum for efficient discrimination, which is shown by the large standard deviation. Because of the test's high internal consistency (mean r = 38), this discrimination is also quite reliable.

The intercorrelations among the parts of the examination are given in the following matrix, where number 15 stands for the total score. To save space, the decimal points have been omitted, so that the figure 61, for instance, means a correlation of .61.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	26													
3	50	50												
4	42	29	69											
5	32	51	52	56										
6	14	21	14	06	22									
7	11	17	12	08	20	35								
8	11	24	05	02	27	40	39							
9	19	27	23	16	30	41	28	44						
10	12	34	27	23	44	35	30	46	43					
11	15	26	22	17	33	27	23	38	35	58				
12	24	35	29	25	39	33	28	46	40	57	52			
13	20	38	35	29	43	40	30	41	42	66	52	58		
14	23	24	29	24	21	24	22	25	33	26	26	40	35	
15	39	53	52	45	62	54	46	62	62	77	65	75	81	55

If the total score (No. 15) is taken for a global measure of proficiency in English (though it includes the variables 1, 3 and 4 which are outside this domain), it appears that the tests of vocabulary and structures (Nos. 10 and 13) are the best single indicators of global proficiency. This is a well-known matter found in many studies.

The VR test (No. 14) has rather evenly low correlations with both the "backround variables" (1 to 5) and the language proficiency subtests (6 to 13). This was to be expected, as the VR test was designed to add something that was not being tested in the examination

already. High correlations would have indicated the opposite. One is rather tempted to draw conclusions from the fact that the VR correlates best with the English lecture and the Reading Comprehension test, which seem the most intellectually demanding of the language subtests. But the differences in the correlations are not really great enough to warrant firm conclusions.

The VR test correlated .55 with the total score (about the same as the "background" variables (1 to 5) but mostly less than the language proficiency subtests). Squared, this correlation shows that the VR test contains 31 % of the variance in the total score. Thus, though the VR does test something not covered by the proficiency tests, it is connected with global language proficiency.

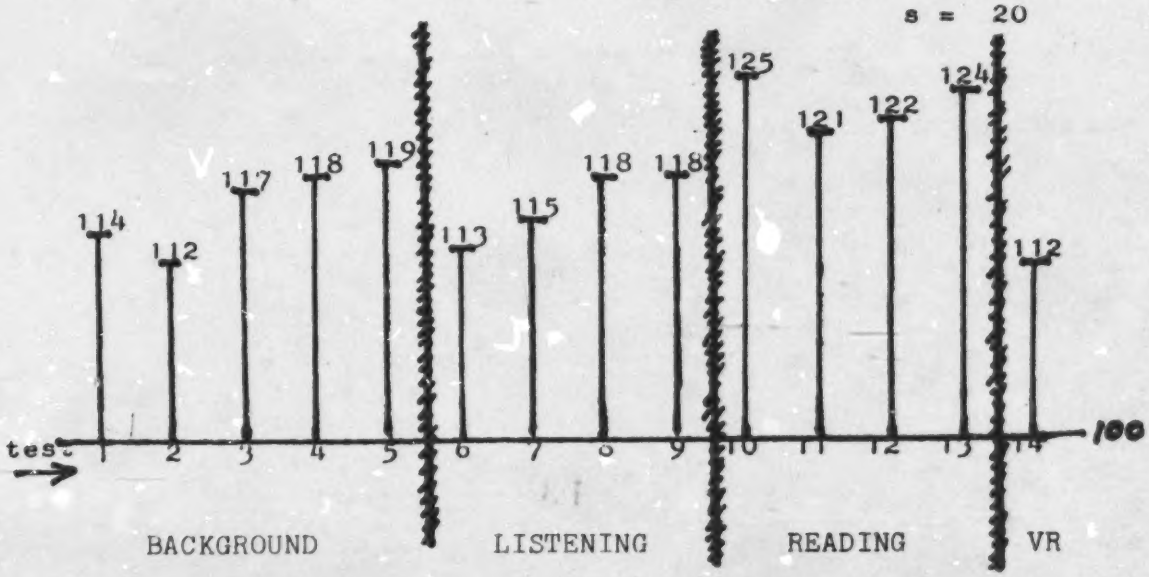
4. THE PERFORMANCE OF VARIOUS SUBGROUPS IN THE ENTRANCE EXAMINATION

Accepted candidates vs. total population

Out of the 1046 candidates who completed the entrance examination, the best 164 were accepted by the English Departments. The selection was made on the basis of a weighted total score (for the weights, see p. 34), which did not include the VR score.

In figure 1, the performance of the accepted candidates in each subtest is compared with that of the total population. The scale used here is: mean = 100, s = 20; so that the baseline (=100) represents the mean of the total population.

Figure 1. The relative superiority of the accepted candidates compared with the total population. $\bar{x}$ = 100, s = 20



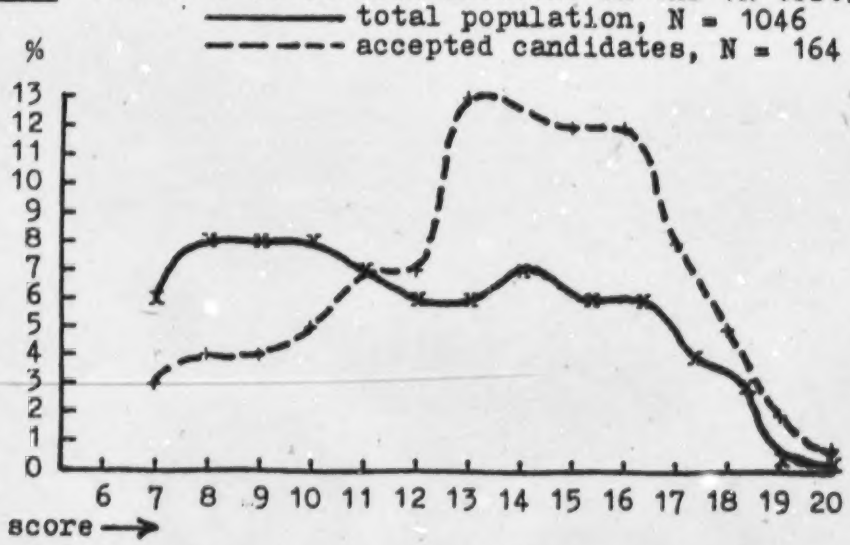
While the accepted candidates are clearly above average in each subtest (including the VR) as well as in the total score, this superiority is not quite uniform. It is most evident in the written subtests (10 to 13). The listening tests and the background variables are about equal in this respect. In the VR test the superiority of the accepted candidates is least in evidence. In other words, it was not nearly in all cases that those selected according to the 1975 criteria were the best performers in the Verbal Reasoning test.

A more detailed comparison of the candidates's performance in the VR test gave the following results:

Means and standard deviations:		accepted candidates	total population
	$\bar{x}$	12.62	9.95
	s	3.38	4.48

Score distributions are presented in figure 2. The score groups have been computed as percentages of the no. of candidates in order to make the sample and the population comparable.

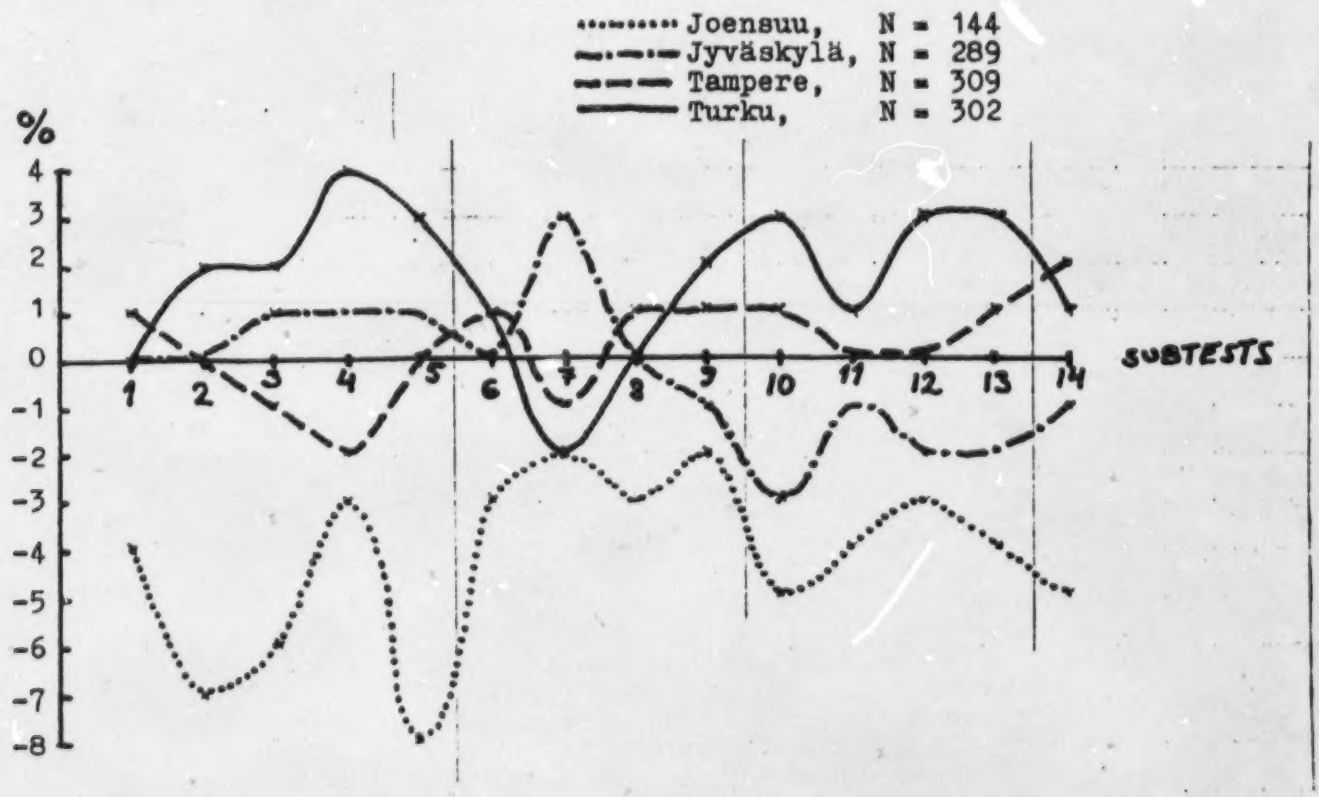
Figure 2. Relative score distributions in the VR test.



Both the means and the score distributions indicate that the accepted candidates performed better in the VR test than the total population. Tests of statistical significance (a t-test for the means and a chi-square test for the distributions) yielded the result that the difference is highly significant ($p < .001$). We may conclude that a high score in the VR test is associated with success in the entrance examination.

To investigate the alleged influence of the candidates' geographical background on the exam results, the means of the subtests were computed separately for those candidates who sat the examination in Joensuu, Jyväskylä, Tampere and Turku (figure 3). Since the candidates were allowed to sit the examination at any of the four places regardless of which one they primarily applied for, it is reasonable to assume that they generally went to the place that was nearest to them. Thus the Joensuu sample and, to a somewhat less extent, that of Jyväskylä represent mostly "the developing areas", while the Tampere and Turku samples represent industrial Finland. This is, of course, a very rough measure.

Figure 3. The relative means of the subtests for the four examination centres. The means are computed in percentage terms and displayed relative to the mean of the whole population (for which see p. 9), which is represented by the baseline.



To investigate the influence of school instruction, separate means were also computed for those who had taken the "long English course" (7 years) at school and those who had taken the "short course" (3 years). These means are shown graphically in figure 4.

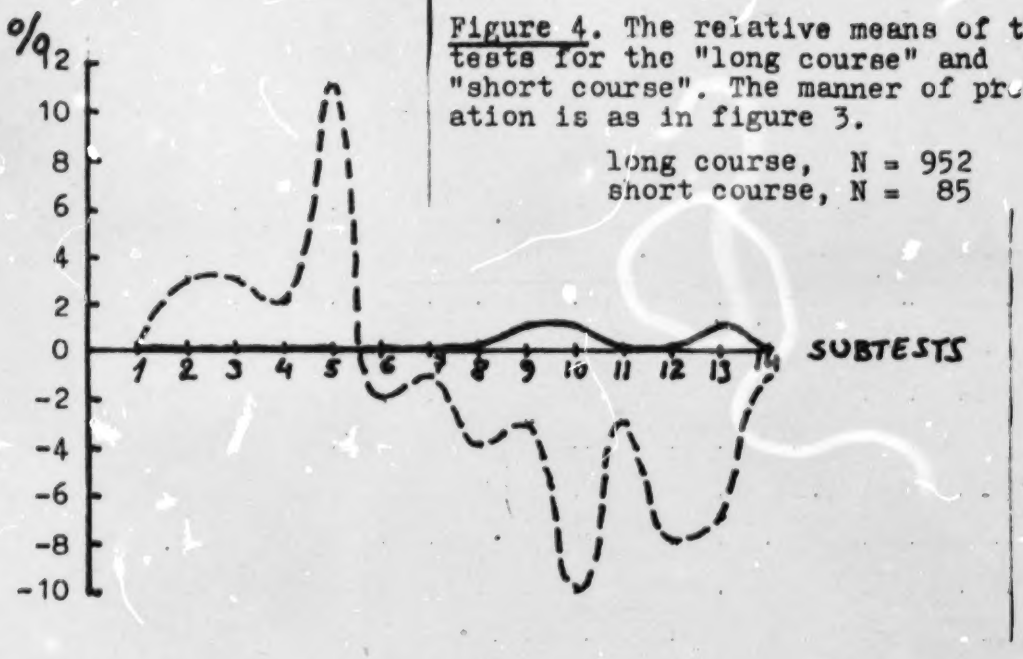


Figure 4. The relative means of the subtests for the "long course" and the "short course". The manner of presentation is as in figure 3.

long course, N = 952
short course, N = 85

The means for the different examination centres show that the Turku sample is above all others in everything but the mother tongue mark (No. 1) and most of the listening tests (6 to 8). The Joensuu sample has the lowest scores in everything, with Jyväskylä and Tampere occupying intermediate positions. These differences are the greatest in the "background variables" (1 to 5) and fairly great in the written part of the examination also (10 to 13). In the listening part the differences are rather small, and in the Verbal Reasoning test about the same as in the written part.

There seems then to be some truth in the argument that in language proficiency the candidates who come from industrial areas have an advantage over those who come from developing areas (although we should keep in mind that the measures used here were rather rough and that there is bound to be huge overlap between the samples, with individual differences outweighing the geographical ones in the selection). One interesting result of this comparison is that, contrary to a commonly-held view (cf. p.30), this advantage is clearly smaller in the command of the spoken language (the listening part) than in that of the written language.

The comparison of the long course and the short course shows that the short course candidates are slightly better in the "background variables", considerably so

in the school mark in English (No. 5; but the school marks in English are not strictly comparable, as the requirements for the two courses differ). In the listening part there are slight differences in favour of the long course. In the written part the long course candidates are considerably better, especially in vocabulary (No. 10). These differences in language proficiency are to be expected, of course: after all, there is a difference of four years' instruction involved here. But it is again interesting to note that the differences are clearly greater in the written than in the listening part. In the VR test, the difference is almost negligible.

The implication of these findings to the use of a versatile language battery instead of the old examinations which assessed the written skills only, is that the inclusion of the listening part has not decreased the chances of those who come from the rural and developing areas or have taken the short English course at school; on the contrary, it has slightly increased them.

In the VR test scores, the differences among the geographical groups were about the same as in the written language subtests (p. 40). They were, however, smaller than those in variables 2, 3, 5 and 10. In the long vs. short course comparison, the difference was only 1 per cent of the maximum score. We can conclude then that the inclusion of the VR test among the selection criteria would, while enhancing the discrimination and reliablity of the selection system (cf. table 1 on page 35), tend to level the differences among the candidate groups discussed here.

5. DISCUSSION

The Verbal Reasoning test tried out in 1975 was shown to be a technically sound measuring instrument, discriminating among the applicants efficiently and reliably. It was shown to assess largely such qualities as are displayed by those applicants who are selected by academic achievement and language proficiency criteria. However, its object of measurement does not completely overlap with those criteria. The differences between candidates from different regions and with school courses of different length are rather less in evidence in the Verbal Reasoning test than in academic achievement and language proficiency.

These results seem to warrant continued optimism and continued experimentation. A follow-up study is being

planned on the 164 students of English selected in 1975, aimed at finding out whether their success in English studies bears any correlation to their VR test scores, in other words, to what extent the VR test predicts success in academic language studies.

Meanwhile, an improved and somewhat extended version of a VR test is planned to be tried out in the 1976 student selection. Besides English departments, the project leaders for joint selection in French and in Swedish have expressed an interest in participating in the experiment.

By such experimentation, it seems possible to evolve in the next few years a general linguistic entrance examination designed to assess suitability for the academic study of language subjects, to be supplemented by language-specific proficiency tests (cf. page 30).

Lastly, I should like to return to the question of equality of educational opportunity emphasised by the Association of Modern Language Students (see p. 30). In my view, that aim should be considered in the context of the whole educational system, not in one part in isolation. There is no denying that parents in the higher socio-economic strata can give their children an advantage regarding language achievement (besides innumerable other educational advantages, of course). The reasons for this have largely to do with the uneven distribution of wealth in the society and the uneven quality of school instruction. What the language departments can do here is to train better teachers and thus raise the standard of school instruction. In order to do this, we need to select such students as are best suited and motivated for academic language study and most likely to succeed in their studies and, later on, in their careers as teachers and researchers. To me, this seems a greater contribution towards the equalisation of educational opportunity in terms of the whole educational system than failure to require of the applicants, in the name of narrowly-viewed social justness, an adequate initial command of the spoken and written modes of the language(s) to be studied. In order to make the selection on the basis of suitability and limit the language proficiency testing to ascertaining a standard adequate for following instruction, we need more valid indicators or suitability than are available at present. This is what the work reported in this paper is about.

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